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ABSTRACT

The purpose of this study was to investigate nonverbal facial, body, and paralinguistic cues to deception in children. A sample of 31 Hispanic and Black second and third grade students were videotaped while playing a color identification that required six honest and six deceptive verbal responses to a randomized stimulus presentation. Frame-by-frame analysis revealed that there were few cues to deception in the facial area, with only a marginally significant main effect for head nodding and no relationship evident for smiling, eye contact, or blinking; that there were no significant cues to deception in the body; and that in the paralinguistic area there were more speech disruptions and a greater time duration in making deceitful responses. The results provide little support for the idea that children are relatively transparent in betraying their deception. (Author)

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Nonverbal Cues to Deception in Children*

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Nonverbal Cues to Deception in Children

The purpose of this study was to investigate nonverbal facial, body, and paralinguage cues to deception in children. A sample of 31 Hispanic and Black second and third grade students were videotaped while playing a color game which requires six honest and six deceptive verbal responses to a randomized stimulus presentation. Frame-by-frame analysis revealed that (a) there were few cues to deception in the facial area, with only a marginally significant main effect for head nodding and no relationship evident for smiling, eye contact, or blinking, (b) that there were no significant cues to deception in the body, and (c) in the paralinguage area there were more speech disruptions and a greater time duration in making deceitful responses. The results provide little support for the idea that children are relatively transparent in betraying their deception.

NONVERBAL CUES TO DECEPTION IN CHILDREN

The purpose of this study was to investigate nonverbal cues to deception in children. Although a number of studies have been conducted to determine deception cues in adults, few studies have used children as subjects. In addition, the present study varied the sex and ethnicity of the children, variables which have seldom appeared in the deception literature.

Research in the area of nonverbal cues to deception has primarily investigated cues within the facial, body, and paralinguistic areas. Within the facial area, head nodding was found to decrease during deception in one of several studies conducted by Mehrabian (1971). Smiling decreased under deception conditions according to McClintock and Hunt (1975), but Mehrabian (1971) reported an increase in smiling during deception. Eye contact has been found to be unrelated to deception (Burns and Kintz, 1976; McClintock and Hunt, 1975), and less frequent during deception (Knapp, Hart, and Dennis, 1974; Mehrabian, 1971).

The search for bodily cues to deception has included foot and leg shifts, postural shifts, hand and arm gesturing, and the manipulation of one's hands or objects. Schneider and Kintz (1977) found that foot and leg shifts both increased and decreased during deception, while Mehrabian (1971) detected a decrease in foot movement rates. Ekman and

Friesen (1972) found a decrease in gesturing during deception, while Knapp et al (1974) and McClintock and Hunt (1975) noted more self manipulations. Finally, McClintock and Hunt (1975) reported more postural shifting during deception.

In the category of paralinguistic cues, Harrison, Hwalek, Raney, and Fritz (1978) reported that subjects were more hesitant in responding during deception and that deceptive responses were longer, although Mehrabian (1971) found that the rate of speech during deception was faster. Mehrabian (1971) also found that more speech disruptions occurred during deception. Several studies have confirmed that voice pitch rises during deception (Ekman and Friesen, 1974; Ekman, Friesen, and Sherer, 1976; Streeter, Krauss, Geller, Olson, and Apple, 1977).

None of the previous studies dealt with children as subjects, nor with ethnicity as an interacting variable. Although a few sex interaction effects have been reported, the question of differences in non-verbal cues as a function of ethnicity is an unexplored area. The present study utilized a sample of Black and Hispanic children for this purpose.

The use of children can also provide a further test of the assumptions of Ekman and Friesen (1969 a; 1974), who maintain that facial deception clues are more readily managed than bodily deception clues, primarily because of the greater social reinforcement and accountability of the facial versus the bodily areas, leading to a greater emphasis on the management of the facial area. It was expected that children, like adults, would yield deception cues from the body, but that the facial area would be the source of more deception clues

for children than for adults. This is because children presumably have had less training than adults in the process of managing their facial expressions. Since successful deception is assumed to involve a learned set of responses, children should in general be more prone to betray their deception through observable cues, whether it be in the face, the body, or the voice.

METHOD

Design

A 2 X 2 X 2 (deception, ethnicity, and sex) mixed ANOVA design was used, with repeated measures on the deception variable, to assess the effect of these variables on nine nonverbal measures. After combining frequency and time-ratio data for the smiling and eye contact variables, separate ANOVAs were calculated.

Subjects

Thirty-one students were randomly selected from the four second and third grade classrooms at a Bakersfield elementary school, including five Black and eleven Hispanic males, and six Black and nine Hispanic females. Scores from two males, one Black and one Hispanic, were dropped from statistical evaluation because they both failed to respond honestly during any of the experimental trials, and apparently misunderstood the directions.

Apparatus

A black and white Panasonic videotape recorder, model NV30-85, was used to record each subject during the directions and manipulation portions of the experiment. Twelve nine-by-twelve inch cards were used in the deception manipulation, three having a large red square painted

on the face, three having blue squares, and six having other colors. The color of the square was not visible from the back of the card.

Procedure

After gaining each child's approval for cooperation, contact was made with each parent in order to obtain written consent. Subjects were brought individually to the lab and seated facing the examiner and videotape recorder.

The deception manipulation was structured to provide a controlled verbal response pattern, e.g., "The Color is blue," and an equal number of trials for the honest and deception conditions. Subjects were asked to respond truthfully on the six trials when presented with a red or blue stimulus, and to attempt to deceive the experimenter by saying "red" or "blue" (an incorrect response) on the six trials when they were shown colors other than red or blue. A possibility of winning 50¢ for three or more successful deceptions was introduced to increase the saliency of the deception.

The experimenter presented the 12 stimulus cards in randomized sequence. After each response by the subject, the experimenter recorded the statement as blue or red and judged the response as honest or deceptive, which was later used in the measurement of deception ability.

A short debriefing followed, with the experimenter congratulating the children and discussing with them the problem of trying to figure out whether someone is fooling them.

The following nonverbal and paralinguistic variables were measured via frame-by-frame analysis at half-second intervals:

1. Eye contact: combined variable, with the ratio of time spent in direct eye contact with the experimenter to the total elapsed time (z-score), added to the frequency of contact episodes per second (z-score).
2. Blinking rate: number of discrete eye closures divided by elapsed time in seconds.
3. Smiling: combined variable, with the ratio of time spent smiling to total time of event (z-score), added to the frequency of smiling episodes per second (z-score).
4. Speech disruption rate: sum of "non-ah" disruptions (Kasl and Mahl, 1965) divided by total elapsed time in seconds.
5. Head nodding rate: total number of discrete forward nods divided by total elapsed time in seconds.
6. Adaptor rate: number of self-manipulations or object-manipulations divided by total elapsed time in seconds.
7. Gesticulation rate: includes both emblems and regulators (Ekman and Friesen, 1969b); total number of hand/arm position shifts excluding self-contact or object-contact, divided by elapsed time in seconds.
8. Foot/leg and posture shifts: Total number of changes of position of either feet, legs, or trunk, divided by elapsed time in seconds.
9. Trial duration: average elapsed time of the trials in seconds.

RESULTS

Separate 2 X 2 X 2 Mixed design ANOVAs, with repeated measures on the honest/deceptive variable, were conducted for the nine nonverbal dependent variables. Main effects for the honest/deception conditions were found for only three variables: the mean speech disruption rate, head nodding rate, and average trial duration were all significantly higher in the deception versus the honest conditions. A marginal main effect of ethnicity ($p < .10$) was also found, with the blinking rate greater for Black than for Hispanic subjects. Table 1 lists the F values of the main effects for each of the nine nonverbal dependent variables.

Table 1 About Here

DISCUSSION

Contrary to expectations, there were no significant nonverbal deception cues in the body. Although the children displayed a variety of movements, none were related to the experimental conditions. This result is surprising in light of previous findings concerning adults, and in view of the position of Ekman and Friesen (1969 a) suggesting that this area should yield deception clues.

The paralinguage results fared much better. We have no evidence bearing on the speech pitch or volume issue, but subjects during deception were clearly more prone to speech disruptions and to a greater duration in making their responses. These results are con-

sistent with Harrison et al. (1978) and with Mehrabian (1971). The trial duration effect could be caused by the extra time required to formulate a deceptive response or by an increase in tension during deception. The speech disruption frequency can also be viewed as a reflection of the tension of the situation.

The facial area yielded marginally significant main effects for head nodding. The increased head nodding during deception was the opposite of Mehrabian's (1971) results, and in the present study head nodding may be reasonably interpreted as an attempt by the subjects to gain the experimenter's approval for their deception. For example, Rosenfeld (1966 a; 1966 b) found that head nodding was used as an approval-seeking gesture. Eye contact was also unrelated to deception, contrary to expectations. The evidence regarding eye contact in the previous research was mixed, but it was expected that eye contact would more likely be a significant variable in children as compared to adult samples.

A recent dissertation study by Hocking (1976) suggests a possible reconciliation. Hocking found that observers were better able to detect emotional feelings by observing the body rather than the head, while a factual deception was detected better by those who observed the head only. Thus, the type of deception may be important in determining the area in which deception cues will be dominant. The present study dealt with a factual deception, and the facial area was slightly more revealing than the body, as in the Hocking study.

The results of this study provide little support for the idea that children will be relatively transparent in betraying their deception.

The most surprising evidence concerns the lack of bodily cues to deception, which we expected to be significant. Based upon this and prior research, the paralanguage area appears to be the most consistent in yielding cues to deception.

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Table 1. ANOVA Summaries-- F^a Values for Main Effects

Variables	Source		
	Trials	Ethnicity	Sex
	(Honest/Deceptive)		
1. Eye Contact	.04	.43	1.84
2. Blinking	2.13	3.35*	1.64
3. Smiling	.02	1.58	.67
4. Head Nodding	3.95*	.19	.39
5. Adaptors	.25	.06	.10
6. Gesticulation	1.48	.43	.50
7. Foot/Leg and Posture Shifts	.16	.32	1.77
8. Speech Disruption	19.38***	.40	2.89
9. Trial Duration	4.37**	.98	.59

^aAll $dfs = 1, 25$.

* $p < .10$.

** $p < .05$.

*** $p < .001$.